

Core Team-State Assessment of Forest Resources (SAFR)

Notes for March 5, 2009 meeting

Committee Member Attendees:

- Steve Kimball – Idaho Department of Lands (co-lead); National Fire Plan Coordinator
- David Stephenson – Idaho Department of Lands (co-lead); Urban Interface/Planning Prog. Mgr.
- Mike Bowman – Idaho Community Forestry Advisory Council
- Frank Gariglio – Natural Resource Conservation Service; State Forester
- Craig Glazer – Idaho Panhandle National Forest; Deputy Forest Fire Management Officer
- Kurt Mettler – Coeur d'Alene Tribe; Forestry Program Manager
- Robyn Miller – The Nature Conservancy; North Idaho Conservation Manager
- Steve Winward – US Forest Service Region 4; GIS Specialist

Committee Members Unable to Attend:

- Mike DeArmond – US Bureau of Land Management; Forester
- Greg Servheen—Idaho Department of Fish and Game; Wildlife Program Coordinator

Committee Staff Attendees:

- Mary Fritz – Idaho Department of Lands; Planning and Development Specialist
- Suzie Jude – Idaho Department of Lands; Forest Stewardship Program Data Coordinator
- Andrew Mock – Idaho Department of Lands; GIS Analyst
- Meghan Lonneker – Idaho Department of Lands; GIS Analyst

1) Welcome, Introduction – Steve and Dave

Andrew and Meghan were introduced to the team—they will be doing the “heavy lifting” on the GIS end, looking for and assessing datasets, processing the geospatial data and doing the analyses for this assessment.

2) Review of SAFR Goals, Methodology, Timeline – Steve and Dave

The group reviewed the list of priority issues for Idaho assembled so far. S. Kimball commented that the priority issues eventually chosen for the analysis will most represent the issues and areas where the highest priority opportunities for joint projects exist. During the analysis phase of the project, locations of priority issues are not intended to be precise, but the analysis will provide a broad statewide overview. D. Stephenson recommended adding an additional 30 days to the original timeline for determining best available data with which to inform the issues. Extending the timeline until March 28, 2009 will also provide additional time for input from interested shareholder groups unable to attend today's meeting.

3) Discuss/Clarify Proposed Issues & Data Sets

Following discussion by the group, the list of priority issues was restructured and amended, as follows.

- *Threat*—**Climate Change** was eliminated as a stand-alone issue and is now part of the **Forest Health** issue.
- *Threat*—**Forest Health** added as Drivers/Indicators: **Loss of Landscape Diversity** and **Climate Change**.
- *Threat*—**Catastrophic Wildfire** renamed **Wildfire Impacts**
- *Threat*—**Development/subdivisions/population growth** renamed **Conversion of Forest Land**.
- *Benefit*—The **Lack of Infrastructure/Markets** issue was changed from a threat to a benefit and combined with the **People** and **Economic Potential** issues.
- *Benefit*—**Wildlife** renamed **Wildlife/Rare Plant Communities** and added sub-category **Winter Elk Range**. **Question—should wildlife stand on its own as an issue? If so, can ‘rare plant communities’ be added as part of the Health Forest Ecosystems issue?** The reasoning is that the wildlife issue is not just about T&E species, but concerns fish and game species as well.

The team had quite a bit of discussion on these issues, and these are captured within each of the issue descriptions on the following pages.

R. Miller commented on the use of priority Forest Legacy Program areas in SAFR and asked if there is national guidance addressing FLP prioritization following SAFR completion. D. Stephenson will check on this, but noted that this assessment will replace the Legacy Areas of Need assessment.

M. Bowman questioned whether the analysis should paint a current picture of Idaho’s priority issues or one based on future trends. If the latter, he commented that the analysis should incorporate new trend data about Idaho regarding occupational turnover, change in recreation use, carbon caps, wildlife values vs. trophy hunts, etc. He will provide information to the group regarding work various economic councils are doing to recognize dramatic future trends in the areas of biomass, climate change, and development risk. D. Stephenson agreed that this is consistent with the national guidance to look at trend data when and where available. Incorporating this information into the Response Strategy/Plan may be the best place for this—it can be used to guide how we best address the issues and areas identified in the assessment.

Discussion of best available data sets to inform Idaho’s priority list of issues followed. A. Mock and M. Lonnerker provided GIS perspective as to the pros and cons of various data sets including:

- A. Data available today may be dated or obsolete due to lag time in release;
- B. Resolution or scale of data can be problematic when modeled with data using a different resolution;
- C. Use of modeled data has the potential to lead to over weighting or “double counting” a particular issue, if the data used to develop the model is also used in other incorporated models or as a stand-alone dataset. Models need to be understood to ensure this doesn’t occur.

- 4) Next Meeting is set for April 7, from 9 am to 2 pm Pacific time (10-3 Mountain Time). We discussed the potential of having this via a Net Meeting (everyone logging onto a common conference website and calling into a conference call to talk. Some felt that the arrangement we’ve worked with through the Forest Service may work better as it allows for better interaction at and between the sites. C. Glazer felt the problems at the Moscow site for this meeting were most likely weather related—and that this isn’t typical with these meetings. At this time, we have the Coeur d’Alene office booked and are working on Boise, Moscow and Ogden.

For the April meeting, we plan to have a more refined selection of datasets which directly address the question(s) listed under each issue. We will also begin considering ways to blend these data for each issue—and hopefully we can begin critiquing these for at least some of the issues.

WE NEED YOUR FEEDBACK—whether a member of the Core Development Team, the larger Stakeholder Group, a member of one of the Department of Lands Program Advisory Councils or have an interest in this assessment. Please read through the following issues and give us your thoughts, comments and suggestions. Please try to do this by the end of March so we can discuss at our next core team meeting. These can be provided to David Stephenson or Steve Kimball—e-mail is preferable. Thank You!

Contact information is:

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Steve Kimball – skimball@idl.idaho.gov; 208- 208-666-8646

The Key Issues In Idaho that Threaten Forests and for which Forests Provide Benefit are:

Threats:

1. Forest Health (Forested areas at risk of declining health)
2. Wildfire Impacts
3. Conversion of Forestland (to development)
4. Recreation pressure (ATV's, trespassing, etc.)

Benefits:

5. Wildlife
6. Water quality and quantity
7. Air quality
8. Economic Potential / Sustainable Communities
9. Healthy Forest Ecosystems (Areas of high conservation value) & Rare Plant Communities
10. Connecting with nature—Knowledge & Understanding

Idaho State Assessment of Forest Resources—Key Issues:

1. Forest Health (Forested areas at risk of declining health)

Discussion: Per a suggestion by IDL Forest Health Program Manager (in absentia), Climate Change was removed as a standalone issue and combined into the Forest Health issue. Reasons: 1) the data models are not as certain as many of the other data to be used in this analysis; and 2) there is a strong correlation between forest pests and stresses from changing species ranges due to changes in climate.

Invasive species are part of a Weeds dataset. Currently, there are two available—one developed by the Bureau of Land Management compiling data from various agencies, and one provided by the TNC, also a compilation from various agencies/sources and including data from the TNC. Stephen Cox, the GIS Analyst in the Idaho Department of Agriculture Noxious Weeds Management program, will be contacted to determine which dataset he recommends be used.

IDL GIS staff have the most current Forest Risk dataset and Aerial Detection Data. Prior to leaving the agency, the IDL Forest Health Program Manager developed a model to determine forest risk potential using this data. The current plan is to use this model to develop a “forests at risk from insects and diseases” dataset.

A discussion on forest fragmentation began with a question on why this was important for forest health. The conclusion is that the more roaded an area is, the higher the potential for spread of invasive species. Road density, rather than size was felt to be the primary contributor. We will model miles of road per unit areas and see how it fits into the analysis for this issue.

After discussing the maps showing changes in species ranges in both Brown and Rehfeldt models, the group felt we should model both and see what they look like. The Brown model is a composite of various ecosystem type ranges. The Rehfeldt model looks at range changes of specific species. For this analysis, it was felt ponderosa and lodgepole pine, Douglas fir, grand fir and western red cedar were the critical indicator species. What to capture from this data is a bit more complex. It was decided that looking at areas the ranges will expand into provides information on where proactive species conversions may be warranted, and where ranges will contract as areas that may be experiencing added stress—also opportunities for work to minimize these impacts.

Drivers/Indicators:

1. Invasive species
2. Insects and Diseases
3. Road Density (spread of invasive species)
4. Loss of Landscape Diversity
5. Climate Change (Change of species ranges)

Questions that address this issue:

- Where are invasive species most problematic?
- Where are the areas of declining forest health or which are at risk of decline due to key insect pests?
- What areas have high road densities, which can lead to spread of invasive species?
- Where are the ranges of key forest species likely to change due to climate change?

Potential Datasets:

- a. **Invasive Species**
 - i. Invasive Weeds dataset (% of forest cover) – *ID Dept. of Agriculture/BLM/TNC*
- b. **Insects and Disease**
 - i. National Forest Risk Map – *USDA Forest Service*

Idaho State Assessment of Forest Resources—Key Issues:

- ii. Insect and Disease Aerial Detection Survey (distance from mortality) – *USDA Forest Service*
- c. **Fragmentation**
 - i. Roads (road density) – *State of Idaho*
- d. **Climate Change**
 - i. Brown Climate Change model (Change areas) – *USFS Rocky Mountain Research Station*
 - ii. Rehfeldt Climate Change models (Change areas of key species – *USFS Rocky Mountain Research Station*

2. Wildfire Impacts

Discussion: The name of this issue was changed to the above from **Catastrophic Wildfire** due to different interpretations about the meaning of "catastrophic wildfire". This particular issue still looks at wildfire as a threat—and the datasets should reflect this. The team also discussed the beneficial aspect of wildfire, and fire adapted ecosystems are a condition that helps describe Healthy Forest Ecosystems (Issue #9). Also discussed was the use of fire as a management tool. While not an issue or a driver, this is among a suite of tools for forest management, and can be used to address many of the issues described in this assessment.

The group looked at and discussed the various available wildfire datasets, including Wildland/Urban Interface (WUI), Communities at Risk (CAR), Wildfire Risk and Fire Regime Condition Class (FRCC). The pros and cons of each dataset were discussed. C. Glazier liked the Fire Regime condition class (FRCC) data set as it shows the departure between the current condition and national fire regime based on 2001 imagery. The fire history since 2001 will need to be included in the data set. It identifies where disturbance is needed in the in-grown ladder fuel areas and where catastrophic fire will occur. S. Kimball recommended the assessment include WUI and FRCC data with mask of non-forest land. Use default 1½ mile Healthy Forest Restoration Act (HFRA) distance from communities for WUI.

Drivers/Indicators:

1. Wildfire risk/departure from historical fire regimes
2. Structures and people at risk

Questions that address this issue:

- Where are uncharacteristic wildfires most likely to occur?
- Where are the areas (people and structures) that are most at risk?

Potential Datasets:

- a. **Wildfire Risk/ Departure from Historic Fire Regimes**
 - i. Fire Regime Condition Class – *Landfire data from USFS*
- b. **Structures and people at risk**
 - i. WUI dataset – *USFS/ HFRA*

Idaho State Assessment of Forest Resources—Key Issues:

3. Conversion of Forested Lands (to development)

Discussion: This issue was renamed to the above from Development/ subdivisions/ population growth to better describe the issue. This issue deals with the loss of productive forests to other uses—specifically development—and seeks to identify the areas at greatest risk of conversion. While there are many Drivers/Indicators that are part of this trend, most are not geospatial, but nonetheless contribute to loss of forest and canopy. These may be worth fleshing out a bit more with supportive data for the response strategy.

Also discussed was how the change in well locations (new wells since . . .) may help inform this issue. This is worth checking into, but Theobald's model may work on its own.

Drivers/Indicators:

1. Development growth trends
2. Counties unprepared for growth (not a dataset)
3. Economic/ quantifiable ecosystem benefits of tree not well understood (not a dataset)
4. Inadequate infrastructure (esp. for water)
5. More people means more pressures on forests (consequence of growth)
6. Conversion of private industrial parcels to TIMOs and REITs (policy/markets issue)

Question(s) that address this issue:

- Where is conversion of forested lands to development most likely?

Potential Datasets:

- a. **Development Growth trends**
 - i. Development in density classes, current and predicted – *Theobald*

Idaho State Assessment of Forest Resources—Key Issues:

4. Recreation pressure (ATV's, trespassing, etc.)

Discussion: With its scenic beauty and abundant public lands, Idaho is a great state for outdoor recreation. But unmanaged recreation can have adverse impacts, especially when high-impact activities stray out of designated areas. In addition to fire and fuels, invasive species and loss of open space, the US Forest Service has listed unmanaged recreation as one of its “four threats.” In particular, off road vehicle (OHV) in undesignated areas is increasing erosion, user conflicts, spread of invasive species, damage to cultural sites, disturbance to wildlife, destruction of wildlife habitat, and risks to public safety. Managing the areas where impact or potential impact is greatest, in addition to educational efforts will help alleviate these impacts.

Drivers/Indicators:

1. Advances in OHV technology
2. Increased population growth
3. Increased numbers of OHV's
4. Decrease in open space overall puts greater pressure on remaining lands

Question(s) that address this issue:

- Where are the areas most likely to see damage from unmanaged recreation?

Potential Datasets:

- a. **High-use dispersed recreation areas**
 - i. Roaded Dispersed Recreation areas – *Interior Columbia Basin Ecosystem Management Project (ICBEMP)*
 - a. Note—This dataset is a model comprised of three other datasets: Landscape Profile Pattern, Rural Population/Wildland Interface Areas and Existing Scenic Integrity
- b. **Distance from Population centers**
 - i. Population and population density – *US Census*
 - ii. Roads (buffered from population centers) – *ITD, various*
- c. **Current and/or projected areas of high motorized use in Idaho**
 - i. OHV use areas (if geospatial data exists) – Idaho Conservation League/The Wilderness Society

Idaho State Assessment of Forest Resources—Key Issues:

5. Wildlife/ Rare Plant Communities

Discussion: The state of Idaho is home for a wide array of wildlife species, and maintaining good habitat is essential to ongoing healthy populations. Especially important are those species that are threatened and endangered (T&E), and those that provide recreational opportunities for hunting and fishing. We need to identify the species on which the assessment should focus.

Beyond threatened and endangered fish and wildlife species, it was suggested we include rare plant communities. However, it may be more appropriate to place this elsewhere (such as under Healthy Forest Ecosystems) and keep this issue focused on fish and wildlife. That is, this issue does not focus solely on T&E species, but also on game and other key species. The team will need to make a decision on this.

Drivers/Indicators

1. Fish (Anadromous and bull trout)
2. Wildlife (game/ indicator species)
3. Threatened & Endangered species
4. Biodiversity

Question(s) that address this issue:

- In what areas of the state are wildlife and fish most benefited from forests (keystone species, habitat, etc.)?
 - Where are the (forest) habitats for threatened and endangered species?
 - Where are the (forest) habitats for keystone game species?

Potential Datasets:

- a. **Locations of certain key T&E species**
 - i. List of T&E locations—*Idaho Conservation Data Center*
Note: This dataset cannot be shared
- b. **Habitats of anadromous fish and bull trout**
 - ii. Location data by watershed—*IDL from Endowment Lands assessment*
- c. **Locations of key game species (i.e. elk winter range, etc.)**
 - i. List of ranges, etc. – Idaho Fish and Game
 - ii. Priority Conservation Areas – *The Nature Conservancy*
 - a. TNC data is likely based upon a model—we need to be sure there isn't overlap in this data with others used. We may also wish to use this data for the Healthy Forest Ecosystem issue, but should not use it twice.
- d. **Habitats of key game species**
 - i. State Wildlife Action Plan – *Idaho Fish and Game*

Idaho State Assessment of Forest Resources—Key Issues:

6. Water quality and quantity

Discussion: Rural forests and urban tree canopy have a tremendous value toward good water quality, surface water and aquifer recharge, and stormwater and erosion control. Water is one of the biggest issues in the west and is important for fish, wildlife and humans (agriculture, horticulture and drinking water). Forest canopy shades and cools streams—important for good fish habitat. Forest canopy intercepts rainfall and, along with roots that increase soil absorption, reduces erosion, increases aquifer infiltration, reduces contaminant loads into surface and groundwater and reduces stormwater runoff. This issue focuses forest management efforts in the areas in greatest need for improved water quality/quantity—in both rural and urban environments. Finer resolution data would be helpful in better informing this issue in communities, but our intent is to use what we have available.

Drivers/Indicators

1. Drinking water
2. Aquifer recharge (especially sensitive and sole-source drinking water aquifers)
3. Non-point source pollution (impaired waterways)
4. Stormwater management / impervious surfaces
5. Education and participation in conservation efforts

Question(s) that address this issue:

- Where can forestry techniques along waterways or within watersheds be applied to improve water quality and quantity (such as for drinking water/ municipal watersheds, stormwater/ groundwater recharge, impaired waterways) most effectively in our State?
- Where is the need the greatest?

Potential Datasets:

- a. **Priority Watersheds**
 - i. Location of 305b (303d) impaired waterways (watersheds)—*Idaho DEQ*
- b. **Municipal well locations and the areas they draw from**
 - i. Well locations/draws – *Idaho Department of Water Quality*
- c. **Major deep water Aquifer boundaries**
 - i. Major Idaho Aquifers and recharge areas – *Idaho Department of Water Resources*
- d. **Impervious surfaces (%)**
 - i. Impervious surfaces – *National Land Cover Dataset (USGS)*
- e. **Water temperature**
 - i. Unsure of source

Idaho State Assessment of Forest Resources—Key Issues:

7. Air quality

Discussion: Air quality is both impacted by and benefited from forests. Wildfires—especially large uncharacteristic ones—pump a great deal of particulates (from smoke) and carbon into the air. Communities within the air sheds of these fires suffer poorer air quality and commensurate health impacts. Certain tree species are also net producers of biogenic volatile organic compounds (BVOC's), which can exacerbate ozone production, especially in urban areas. But forest canopy can also absorb and filter particulates and pollutants out of the air, increasing air quality. Likewise, trees sequester carbon and release oxygen—important for mitigating climate change and for human and animal health. Since temperature is a catalyst for production of VOC's, the cooling effect of tree canopy in urban areas can lower their production. Sources of VOC's include any petroleum product that breaks down (asphalt, plastics, etc.) and parked vehicles (evaporation of fuel in gas tanks). By also cooling buildings and thereby lowering energy use, urban tree canopy can also reduce energy production. If this energy is from fossil fuels, this results in additional emissions reductions, including carbon. Finer resolution data would be helpful in better informing this issue in communities, but our intent is to use what we have available.

It makes good sense to manage forests within urban air sheds to increase forest health and fire resiliency, thereby reducing negative impacts on public health. Likewise, increasing canopy cover and forest management within urban areas also has a positive public health impact by helping to reduce the causes of pollution while filtering out other pollutants and particulates.

Drivers/Indicators

1. Ozone/ Volatile organic compounds (VOC's)
2. Particulates (including smoke)
3. Carbon Dioxide, Nitrogen and sulfur dioxides and other airborne pollutants
4. Impervious surfaces / urban tree canopy ratio within communities
5. Population
6. Air sheds

Question(s) that address this issue:

- In what areas do forests most benefit air quality (CO₂, Ozone, non-attainment, particulates)?
- Where are the areas of greatest need (non-attainment, high impervious to canopy ratios)?
- Where are the most people impacted via air sheds (smoke)?

Potential Datasets:

- a. **Urban tree canopy – areas of need**
 - i. Non-attainment areas in Idaho – *Idaho Department of Environmental Quality*
 - i. Impervious surface to Canopy ratio within communities (higher ratios equal greater need)
 - a. Canopy and impervious surfaces datasets—*National Land Cover Dataset (USGS)*
 - b. Community Boundaries – *USGS, US Census*
- b. **Air sheds relative to population centers**
 - i. Air shed boundaries – *Not sure*
 - ii. Population centers or numbers – *US Census*
 - iii. Forested areas – *Landfire vegetation type*
- c. **Carbon Sinks**
 - i. Soil survey data – *National Resource Conservation Service (NRCS)*

Idaho State Assessment of Forest Resources—Key Issues:

8. Economic Potential / Sustainable Communities

Discussion: In many areas of the state, communities are economically and culturally dependent upon forest lands. This includes timber, biomass, recreation, hunting/fishing and ecosystem benefits. Initially, the multi-resource committee and SAFR Stakeholder group identified the loss of forest infrastructure (mills, markets, etc.) as a key issue (threat to forests). The threat was greater than simply economics. When markets and mills shut down, incentives to manage forests are significantly diminished. Forest insect and disease problems, and fire risk, increase, resulting in declining forest health.

However, the core team felt that if markets and infrastructure were already gone, it will be difficult to resurrect these, especially within the changing world economy. Rather, the team felt it better to regard the economic potential of forests as a benefit, and focus on where markets and mills currently exist and additional markets, such as for biomass, are being planned. As communities continue to grow, there is value to considering how this can be accomplished sustainably. That is, producing the food, energy and other resources necessary to support these populations within a set distance surrounding the community.

Drivers, such as the difficulty of Federal lands forest management, were discussed. Various ways to measure this were discussed (such as amount of litigation in various areas), but the challenge of finding this information and developing datasets to express this is beyond the parameters of this project.

One of the more important datasets to consider is the location of current mills, and existing and planned biomass facilities. Areas that are in close enough proximity to feed these markets will be higher priority for projects. Additionally, forest productivity was also discussed at length. Currently, no dataset exists for productivity across the whole state. The team discussed alternative ways to estimate this. One is to simply use vegetation layer as a surrogate for habitat type. While this doesn't measure potential habitat, it may be all we have to work with. Subsequent to the meeting, we found a 30-meter dataset on biomass volume and another on canopy height. The team may wish to consider how a combination of these datasets may provide a more refined estimate of productivity.

Drivers/Indicators

1. Market locations (existing and proposed)
2. Forest habitat and productivity
3. Biomass potential
4. Increasing energy costs
5. Difficulty of managing Federal lands and the impact this has on markets (affecting all ownerships) and the effect this has on forest management, forest health and fire resiliency on across all ownerships.
6. When markets disappear, conversion of productive forestlands to development, especially by timber companies turned real estate investment trusts (REITs) or Timber Investment Management Organization (TIMOs), increases.

Question(s) that address this issue:

- Where are the existing and planned markets (wood products, biomass, etc.)?
- Where are the communities whose economies are supported by forests?
- Where are the most productive forests?

Idaho State Assessment of Forest Resources—Key Issues:

Potential Datasets:

- a. **Market locations**
 - i. Mill sites (stratified by sawlogs, post/pole, chipwood, etc.) – IDL
 - ii. Biomass facilities, existing and planned – *not yet developed, but can be (IDL)*
- b. **Forest Productivity**
 - i. Gap 2 vegetation type – *Idaho Dynamic Landscape Lab*
 - ii. National Biomass and Carbon Dataset 2000 – *BBCD data*
 - iii. Forest stand height – *Landfire*

9. Healthy Forest Ecosystems (Areas of high conservation value) & Rare Plant Communities

Discussion: One of the purposes of this assessment will be to identify areas of high conservation need or value as part of the Federal Forest Legacy program. Information will hopefully also inform organizations that may consider conservation practices, purchases of conservation easements and more. As the team discussed, the datasets used to inform this issue may be models that incorporate information that may be used in other areas of this assessment. These need to be reviewed carefully to ensure some information is not counted or considered multiple times for similar purposes. The team did discuss within the context of wildfire issues that use of fire can be a tool for improving forest ecosystem health, and that fire adapted forests are components of healthy ecosystems.

The team ran out of time as we reached this issue, and did not have the opportunity to discuss. The datasets used to inform this issue need further consideration.

Drivers/Indicators

1. Forest mosaic
2. Open Space
3. Seral species
4. Fire adapted ecosystems
5. Post-fire restoration

Question(s) that address this issue:

- What ex-urban areas of the state have the greatest potential for forest restoration work?
- Where are the areas of the state that are healthy ecosystems that are worth conserving and managing to maintain their value?

Potential Datasets:

- a. **Areas of high conservation value**
 - i. Ecoregional Assessments – *The Nature Conservancy*
 - ii. Legacy Areas of Need (various datasets from Legacy report – *The Idaho Department of Lands*)
- b. **Rare Plant Communities**
 - i. Threatened and Endangered Species list – *Conservation Data Center*
- c. **Fire Resilient Forests (low departure from historic fire regimes)**
 - i. Fire Regime Condition Class – *Landfire data from USFS*

Idaho State Assessment of Forest Resources—Key Issues:

10. Connecting with nature—Knowledge & Understanding

Discussion: As we become more urbanized and “virtually connected” we are losing our connection, understanding and appreciation for our natural world. Wise natural resource decisions depend on this understanding. The issue is particularly acute for children. In his book, *Last Child in the Woods—Saving our Children from Nature Deficit Disorder*, Richard Louv discusses how experiences with nature lead to diminished levels of attention deficit disorder and obesity, fewer incidents of anxiety and depression, improved self esteem, enhanced brain development, and higher levels of curiosity and creativity in our children. In Idaho, we are blessed with an abundance of outdoor opportunities—hiking, climbing, biking, skiing, snowshoeing, hunting, fishing, water sports, trail riding and much more. Where these opportunities exist near population centers, the potential for these connections increase.

Drivers/Indicators

1. Nature deficit syndrome—insufficient experiences with nature
2. Access to outdoor recreation (passive and active) areas
3. What causes people to change behavior?

Question(s) that address this issue:

- Where are the outdoor recreation sites in Idaho?
- Where are these sites within close proximity to population centers?

Potential Datasets:

- a. **Areas of high conservation value**
 - i. Outdoor Recreation sites (weighted by type) – *various (BLM, USFS, IDPR, NPS)*
- b. **Populated areas**
 - i. Population and Population Density – *US Census*